

Remarks

Claims 1-10, 12, 14 and 15 are pending. Claim 1 has been amended to eliminate the alkoxy, hydroxy, alkanoyloxy groups from the Markush group for R<sub>7</sub> and R<sub>9</sub>. Claims 1 and 14 have been amended to delete the divalent group being Q-interrupted-Q-C<sub>4</sub>-C<sub>12</sub>alkylene-Q. Claim 1 has also been amended to delete two embedded preferred embodiments. Claims 3 and 5 have been amended to delete an embedded preferred embodiment. Claim 14 has been amended to restrict R<sub>4</sub> to groups that are bonded to the benzofuranone moiety by an oxygen atom. No new matter has been added.

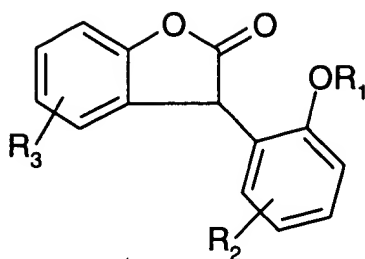
The Examiner rejects claims 1-11 and 13-16 under 35 U.S.C. 112(2) as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as their invention. The Examiner objects to the phrase L is "Q interrupted...Q" in claims 1 and 14. The phrase has been deleted from both claims.

The objects/rejects claims 11, 13 and 16 as being "use claims". The claims have been cancelled without prejudice to the filing of divisional applications employing conventional process claim format.

The Examiner objects to embedded preferred embodiments in claims 1, 3, and 5. Each of the preferred embodiments has been deleted.

The Examiner rejects claims 1-5 and 7-11 (now claims 1-5 and 7-10) under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,981,160 ("Odenwalder et al."). Applicants respectfully traverse this rejection.

Odenwalder teaches the use of Benzofuranones of the formula:



as scavengers for the oxidized developer. The compounds shown in Odenwalder must contain an alkoxy group (OR<sub>1</sub>) ortho to the point of attachment of the unfused phenyl moiety.

Claim 1 has been amended to exclude C<sub>1</sub>-C<sub>2</sub>alkoxy or C<sub>2</sub>-C<sub>20</sub>alkoxy (that can be interrupted) from the scope of R<sub>7</sub> and R<sub>9</sub>. The R<sub>7</sub> and R<sub>9</sub> substituents are found on the substituted phenyl ring of formula II. In view of said amendment, Applicants request that the Examiner reconsider and withdraw her anticipation rejection of claims 1-5, 7-10 in view of Odenwalder.

The Examiner rejects claims 1-16 (now claims 1-10, 12, 14 and 15) under 35 U.S.C. 102 as being anticipated by U.S. Pat. No. 5,597,854 ("Birbaum et al."). Applicants respectfully traverse this rejection.

The present invention relates to a process for preventing migration of oxidized developer in a color photographic material by using the particularly defined benzofuranone compounds of claim 1 and its dependent claims. Birbaum describes the benzofuranone compounds as being possible co-additives with the latent light stabilizers taught therein. In fact, Birbaum listed these compounds as one of many optional types of UV absorbers and light stabilizers. The Examiner has not indicated any motivation for one skilled in the art to select the particularly defined compounds from the multiple of possible stabilizers for use in color photography films. The preferred applications don't even point to photography application. One skilled in the art would be expected to use the compositions taught in Birbaum for stabilizing plastics, rubbers, paints or adhesives. Applicants submit that the Examiner has selected portions of the prior art based upon an understanding of the claimed invention. The motivation and suggestion for use to prevent migration of oxidized developer in a color

photographic material is not found in Birbaum. In the absence of any such motivation, Birbaum certainly fails to disclose each and every element of the claimed process. Applicants request that the Examiner reconsider and withdraw her anticipation rejection of claims 1-10, 12, 14 and 15 in view of Birbaum.

The Examiner rejects claims 14-16 (now claims 14 and 15) under 35 U.S.C. 103 as being unpatentable over Birbaum in view of U.S. Pat. 4,325,863 ("Hinsken et al."). The Examiner applies Birbaum as described above. The Examiner cites Hinsken as teachings benzofuranone compounds wherein the R<sub>2</sub> and R<sub>4</sub> groups are pentyl radicals. The Examiner alleges that it would have been obvious to replace the butyl group taught in Birbaum with the pentyl groups of Hinsken. Applicants respectfully traverse this rejection.

Claim 14 has been amended to limit the R<sub>4</sub> group bonded to the benzofuranone moiety via an oxygen molecule. These compounds are described in examples 13-16 (compounds 29-32). All of the compounds in Hinsken are bonded to the benzofuranone moiety via a carbon atom. Hence, even assuming there is any motivation for the combination and modification urged by the Examiner, the resulting combination does not render the invention of claims 14 and 15 unpatentable.

Applicants submit that the present application is now in condition for allowance. Applicants request that the Examiner contact the undersigned representative if minor amendments will further prosecution.

Respectfully submitted,

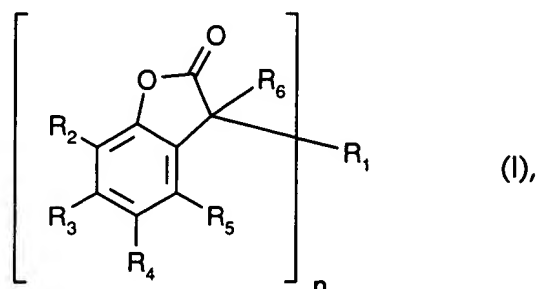


David R. Crichton  
Attorney for Applicants  
Reg. No. 37,300

Ciba Specialty  
Chemicals Corporation  
540 White Plains Road  
P.O. Box 2005  
Tarrytown, New York 10591-9005  
Tel: (914) 785-7124  
Fax: (914) 785-7102

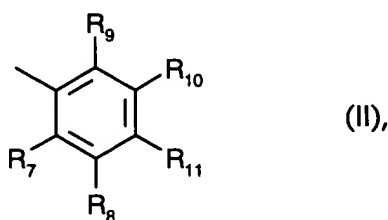
## APPENDIX:

1. (amended) Process for preventing migration of the oxidised developer in a colour photographic material from one colour sensitive layer to another by incorporating a compound of the formula I into said material



wherein, if  $n = 1$ ,

$R_1$  is a cyclic residue selected from naphthyl, phenanthryl, anthryl, 5,6,7,8-tetrahydro-2-naphthyl, 5,6,7,8-tetrahydro-1-naphthyl, thienyl, benzo[b]thienyl, naphtho[2,3-b]thienyl, thianthrenyl, dibenzofuryl, chromenyl, xanthenyl, phenoxathiinyl, pyrrolyl, imidazolyl, pyrazolyl, pyrazinyl, pyrimidinyl, pyridazinyl, indoliziny, isoindolyl, indolyl, indazolyl, purinyl, quinoliziny, isoquinolyl, quinolyl, phthalazinyl, naphthyridinyl, quinoxaliny, quinazoliny, cinnoliny, pteridinyl, carbazolyl, -carboliny, phenanthridinyl, acridinyl, perimidiny, phenanthroliny, phenazinyl, isothiazolyl, phenothiazinyl, isoxazolyl, furazanyl, biphenyl, terphenyl, fluorenyl or phenoxazinyl, each of which is unsubstituted or substituted by  $C_1$ - $C_4$ alkyl,  $C_1$ - $C_4$ alkoxy,  $C_1$ - $C_4$ alkylthio, hydroxy, halogen, amino,  $C_1$ - $C_4$ alkylamino, phenylamino or di( $C_1$ - $C_4$ -alkyl)amino; or  $R_1$  is a radical of formula II



and, if  $n = 2$ ,

$R_1$  is unsubstituted or  $C_1$ - $C_4$ alkyl- or hydroxy-substituted phenylene or naphthylene; or  $-R_{12}-X-R_{13}-$ ;

$R_2$ ,  $R_3$ ,  $R_4$  and  $R_5$  are each independently of one another hydrogen; chloro; hydroxy;  $C_1$ - $C_{25}$ -alkyl;  $C_7$ - $C_9$ phenylalkyl; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl; unsubstituted or  $C_1$ - $C_4$ alkyl-

substituted C<sub>5</sub>-C<sub>8</sub>cycloalkyl; C<sub>1</sub>-C<sub>18</sub>alkoxy; C<sub>1</sub>-C<sub>18</sub>alkylthio; C<sub>1</sub>-C<sub>4</sub>alkylamino; di(C<sub>1</sub>-C<sub>4</sub>-alkyl)amino; C<sub>1</sub>-C<sub>25</sub>alkanoyloxy; C<sub>1</sub>-C<sub>25</sub>alkanoylamino; C<sub>3</sub>-C<sub>25</sub>alkenoyloxy; C<sub>3</sub>-C<sub>25</sub>alkanoyloxy which is

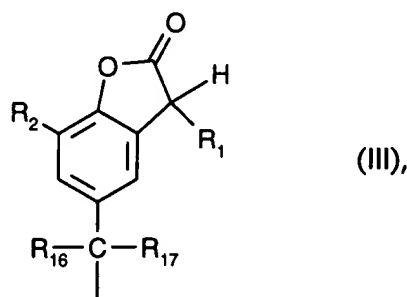
interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$ ; C<sub>6</sub>-C<sub>9</sub>cycloalkylcarbonyloxy; benzoyloxy or C<sub>1</sub>-

C<sub>12</sub>alkyl-substituted benzoyloxy; or R<sub>2</sub> and R<sub>3</sub>, or R<sub>3</sub> and R<sub>4</sub>, or R<sub>4</sub> and R<sub>5</sub>, together with the linking carbon atoms, form a benzene ring;

or R<sub>4</sub> is -C<sub>m</sub>H<sub>2m</sub>-COR<sub>15</sub>, -O-(C<sub>v</sub>H<sub>2v</sub>)-COR<sub>15</sub>, -O-(CH<sub>2</sub>)<sub>q</sub>-OR<sub>32</sub>, -OCH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-R<sub>15</sub>,

-OCH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-OR<sub>32</sub> or -(CH<sub>2</sub>)<sub>q</sub>OH;

or, if R<sub>3</sub>, R<sub>5</sub> and R<sub>6</sub> are hydrogen, R<sub>4</sub> is additionally a radical of formula III



wherein R<sub>1</sub> is as defined above for n = 1;

R<sub>6</sub> is hydrogen or, when R<sub>4</sub> is hydroxy, R<sub>6</sub> can also be C<sub>1</sub>-C<sub>25</sub>alkyl or C<sub>3</sub>-C<sub>25</sub>alkenyl;

R<sub>7</sub> and R<sub>9</sub> are each independently of one another hydrogen; halogen; C<sub>1</sub>-C<sub>25</sub>alkyl; C<sub>2</sub>-C<sub>25</sub>alkyl

which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$ ; C<sub>1</sub>-C<sub>25</sub>alkylthio; C<sub>3</sub>-C<sub>25</sub>-alkenyl; C<sub>3</sub>-

C<sub>25</sub>alkenyloxy; C<sub>3</sub>-C<sub>25</sub>alkynyl; C<sub>3</sub>-C<sub>25</sub>alkynyloxy; C<sub>7</sub>-C<sub>9</sub>phenylalkyl; C<sub>7</sub>-C<sub>9</sub>phenylalkoxy;

unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenyl; unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl- substituted

phenoxy; unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted C<sub>5</sub>-C<sub>6</sub>cycloalkyl; unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-

substituted C<sub>5</sub>-C<sub>8</sub>cycloalkoxy; C<sub>1</sub>-C<sub>4</sub>alkylamino; di(C<sub>1</sub>-C<sub>4</sub>alkyl)amino; C<sub>1</sub>-C<sub>25</sub>alkanoyl; C<sub>3</sub>-

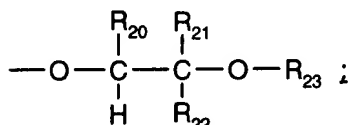
C<sub>25</sub>alkanoyl which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$ ; C<sub>1</sub>-C<sub>25</sub>alkanoylamino; C<sub>3</sub>-

C<sub>25</sub>alkenoyl; C<sub>3</sub>-C<sub>25</sub>alkenoyl which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$ ; C<sub>3</sub>-C<sub>25</sub>.

alkenoyloxy; C<sub>3</sub>-C<sub>25</sub>alkenoyloxy which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ; C<sub>6</sub>-C<sub>9</sub>.

cycloalkylcarbonyl; C<sub>6</sub>-C<sub>9</sub>cycloalkylcarbonyloxy; benzoyl or C<sub>1</sub>-C<sub>12</sub>alkyl-substituted benzoyl;

benzoyloxy or C<sub>1</sub>-C<sub>12</sub>alkyl-substituted benzoyloxy;  $\text{—O—}\overset{\text{R}_{18}}{\underset{\text{R}_{19}}{\text{C}}}\text{—}\overset{\text{O}}{\parallel}\text{C—R}_{15}$  or



R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub> and R<sub>11</sub> are each independently of one another hydrogen; halogen; hydroxy; C<sub>1</sub>-

C<sub>25</sub>alkyl; C<sub>2</sub>-C<sub>25</sub>alkyl which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ; C<sub>1</sub>-C<sub>25</sub>alkoxy; C<sub>2</sub>-

C<sub>25</sub>alkoxy which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ; C<sub>1</sub>-C<sub>25</sub>alkylthio; C<sub>3</sub>-C<sub>25</sub>-alke-

nyl; C<sub>3</sub>-C<sub>25</sub>alkenyloxy; C<sub>3</sub>-C<sub>25</sub>alkynyl; C<sub>3</sub>-C<sub>25</sub>alkynyloxy; C<sub>7</sub>-C<sub>9</sub>phenylalkyl; C<sub>7</sub>-C<sub>9</sub>phenylalkoxy; unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenyl; unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenoxy; unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted C<sub>5</sub>-C<sub>8</sub>cycloalkyl; unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted C<sub>5</sub>-C<sub>8</sub>cycloalkoxy; C<sub>1</sub>-C<sub>4</sub>alkylamino; di(C<sub>1</sub>-C<sub>4</sub>alkyl)amino; C<sub>1</sub>-C<sub>25</sub>alkanoyl; C<sub>3</sub>-

C<sub>25</sub>alkanoyl which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ; C<sub>1</sub>-C<sub>25</sub>alkanoyloxy; C<sub>3</sub>-

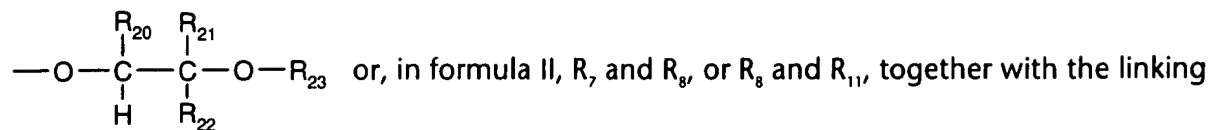
C<sub>25</sub>alkanoyloxy which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ; C<sub>1</sub>-C<sub>25</sub>alkanoylamino;

C<sub>3</sub>-C<sub>25</sub>alkanoyl; C<sub>3</sub>-C<sub>25</sub>alkanoyl which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ; C<sub>3</sub>-C<sub>25</sub>.

alkenoyloxy; C<sub>3</sub>-C<sub>25</sub>alkenoyloxy which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ; C<sub>6</sub>-C<sub>9</sub>.

cycloalkylcarbonyl; C<sub>6</sub>-C<sub>9</sub>cycloalkylcarbonyloxy; benzoyl or C<sub>1</sub>-C<sub>12</sub>alkyl-substituted benzoyl;

benzoyloxy or C<sub>1</sub>-C<sub>12</sub>alkyl-substituted benzoyloxy;  $\text{---O---}\overset{\overset{\text{R}_{18}}{|}}{\underset{\underset{\text{R}_{19}}{|}}{\text{C}}}\text{---}\overset{\overset{\text{O}}{||}}{\text{C}}\text{---R}_{15}$  or



carbon atoms, form a benzene ring;

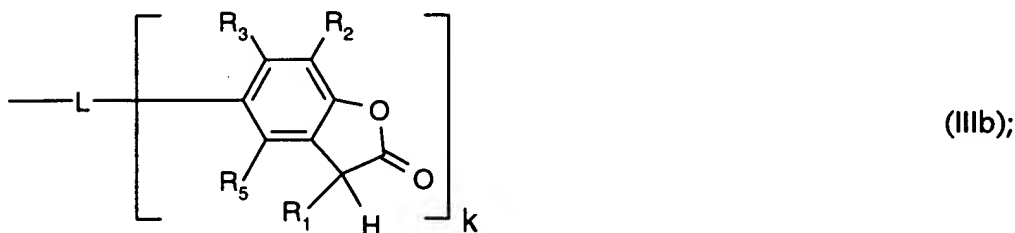
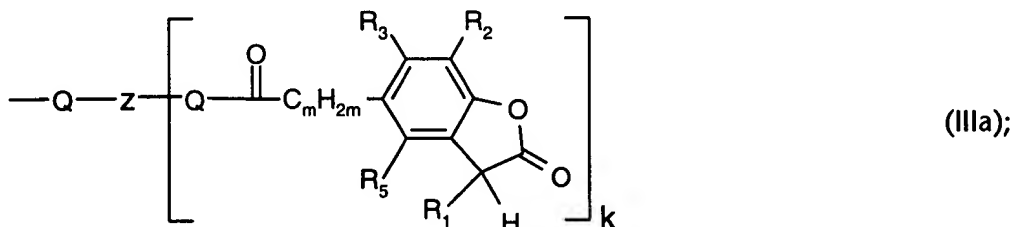
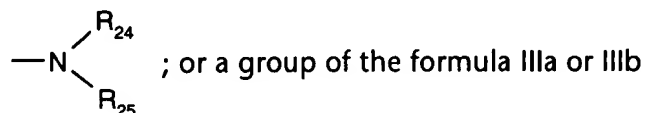
R<sub>12</sub> and R<sub>13</sub> are each independently of the other unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenylene or naphthylene;

R<sub>14</sub> is hydrogen or C<sub>1</sub>-C<sub>8</sub>alkyl;

R<sub>15</sub> and R'<sub>15</sub> independently are hydroxy;  $\left[ \text{---O}^- \frac{1}{r} \text{M}^{r+} \right]$ ; C<sub>1</sub>-C<sub>20</sub>alkoxy; C<sub>3</sub>-C<sub>20</sub>alkoxy

interrupted by O and/or substituted by a radical selected from OH, phenoxy, C<sub>7</sub>-

C<sub>15</sub>alkylphenoxy, C<sub>7</sub>-C<sub>15</sub>alkoxyphenoxy; or are C<sub>5</sub>-C<sub>12</sub>cycloalkoxy; C<sub>7</sub>-C<sub>17</sub>phenylalkoxy; phenoxy;



R<sub>16</sub> and R<sub>17</sub> are each independently of the other hydrogen, CF<sub>3</sub>, C<sub>1</sub>-C<sub>12</sub>alkyl or phenyl, or R<sub>16</sub> and R<sub>17</sub>, together with the linking carbon atom, are a C<sub>5</sub>-C<sub>8</sub>cycloalkylidene ring which is unsubstituted or substituted by 1 to 3 C<sub>1</sub>-C<sub>4</sub>alkyl;

$R_{18}$  and  $R_{19}$  are each independently of the other hydrogen,  $C_1$ - $C_4$ alkyl or phenyl;

$R_{20}$  is hydrogen or  $C_1$ - $C_4$ alkyl;

$R_{21}$  is hydrogen; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl;  $C_1$ - $C_{25}$ alkyl;  $C_2$ - $C_{25}$ alkyl which is

interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ;  $C_7$ - $C_9$ phenylalkyl which is unsubstituted or

substituted at the phenyl moiety by 1 to 3  $C_1$ - $C_4$ alkyl;  $C_7$ - $C_{25}$ phenylalkyl which is interrupted by

oxygen, sulphur or  $\text{>N-R}_{14}$  and which is unsubstituted or substituted at the phenyl moiety

by 1 to 3  $C_1$ - $C_4$ alkyl; or  $R_{20}$  and  $R_{21}$ , together with the linking carbon atoms, form a  $C_3$ -

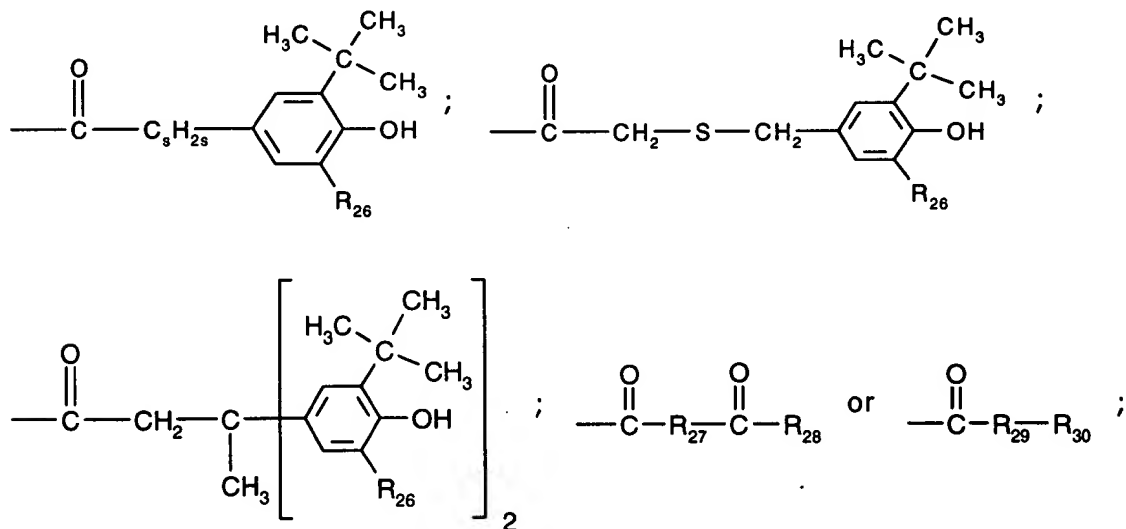
$C_{12}$ cycloalkylene ring which is unsubstituted or substituted by 1 to 3  $C_1$ - $C_4$ alkyl;

$R_{22}$  is hydrogen or  $C_1$ - $C_4$ alkyl;

$R_{23}$  is hydrogen;  $C_1$ - $C_{25}$ alkanoyl;  $C_3$ - $C_{25}$ alkenoyl;  $C_3$ - $C_{25}$ alkanoyl which is interrupted by oxygen,

sulphur or  $\text{>N-R}_{14}$  ;  $C_2$ - $C_{25}$ alkanoyl which is substituted by a di( $C_1$ - $C_6$ alkyl)phosphonate

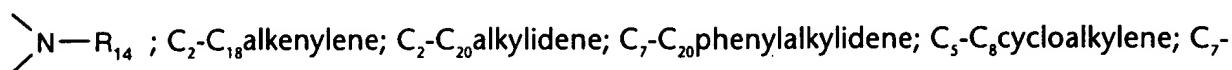
group;  $C_6$ - $C_9$ cycloalkylcarbonyl; thenoyl; furoyl; benzoyl or  $C_1$ - $C_{12}$ alkyl-substituted benzoyl;



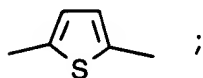
$R_{24}$  and  $R_{25}$  are each independently of the other hydrogen or  $C_1$ - $C_{18}$ alkyl;

$R_{26}$  is hydrogen or  $C_1$ - $C_8$ alkyl;

$R_{27}$  is a direct bond;  $C_1$ - $C_{18}$ alkylene;  $C_2$ - $C_{18}$ alkylene which is interrupted by oxygen, sulphur or



$C_8$ bicycloalkylene; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenylene;  or



$R_{28}$  is hydroxy,  $\left[ -O^- \frac{1}{r} M^{r+} \right]$  ,  $C_1$ - $C_{18}$ alkoxy or  $-N \begin{matrix} R_{24} \\ R_{25} \end{matrix}$  ;

$R_{29}$  is oxygen or -NH-;

$R_{30}$  is  $C_1$ - $C_{18}$ alkyl or phenyl;

$R_{31}$  is hydrogen or  $C_1$ - $C_{18}$ alkyl;

$R_{32}$  is  $C_1$ - $C_{18}$ alkanoyl;  $C_1$ - $C_8$ alkanoyl substituted by phenyl or  $C_7$ - $C_{15}$ alkylphenyl;  $C_3$ - $C_{18}$ alkenoyl; cyclohexylcarbonyl; or naphthylcarbonyl;

L is a linking group of valency (k+1) and is as a divalent group

-O-;

Q- $C_2$ - $C_{12}$ alkylene-Q;

-O-CH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-O-;

-Q- $C_2$ - $C_{12}$ alkylene-Q-CO-C<sub>v</sub>H<sub>2v</sub>-O-;

-O- $C_2$ - $C_{12}$ alkylene-O-CH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-O-;

~~Q-interrupted-Q- $C_4$ - $C_{12}$ alkylene-Q-~~

Q-phenylene-Q or

Q-phenylene-D-phenylene-Q with D being  $C_1$ - $C_4$ alkylene, O, S, SO or SO<sub>2</sub>;

L as a trivalent group is Q-capped  $C_3$ - $C_{12}$ alkanetriyl, a trivalent residue of a hexose or a hexitol,

or a group (-O-CH<sub>2</sub>)<sub>3</sub>C-CH<sub>2</sub>OH; -Q-C<sub>6</sub>H<sub>2a</sub>-N(C<sub>6</sub>H<sub>2b</sub>-Q)-C<sub>6</sub>H<sub>2c</sub>-Q-;

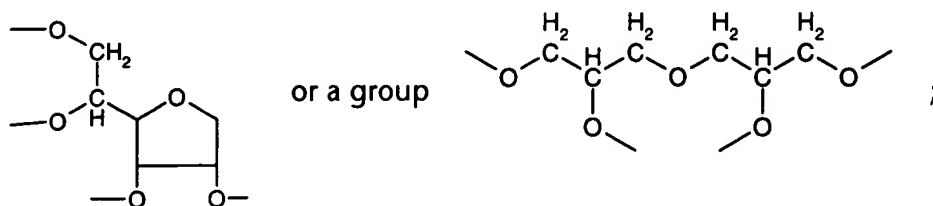
-Q-C<sub>3</sub>- $C_{12}$ alkanetriyl(-Q-CO-C<sub>v</sub>H<sub>2v</sub>-O-)<sub>2</sub>;

-O-C<sub>3</sub>- $C_{12}$ alkanetriyl(-O-CH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-O-)<sub>2</sub>; and

L as a tetravalent group is a tetravalent residue of a hexose or a hexitol;

$-Q-C_4-C_{12}$ alkanetetryl( $-Q-CO-C_vH_{2v}-O-$ )<sub>3</sub>;

$-O-C_4-C_{12}$ alkanetetryl( $-O-CH_2-CH(OH)-CH_2-O-$ )<sub>3</sub>; Q-capped  $C_4-C_{12}$ alkanetetryl; a group



M is an r-valent metal cation;

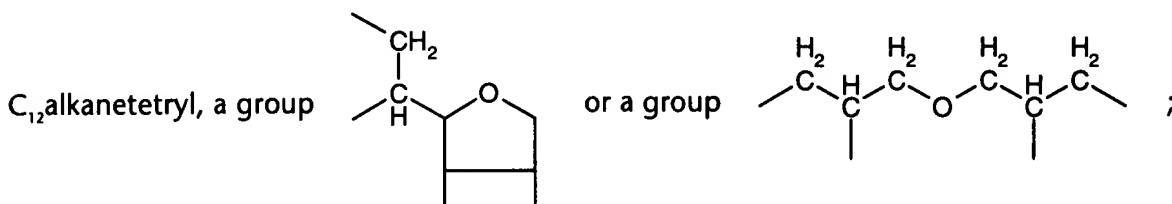
Q is oxygen or  $-NH-$ ;

X is a direct bond, oxygen, sulphur or  $-NR_{31}-$ ;

Z is a linking group of valency (k+1) and is as a divalent group  $C_2-C_{12}$ alkylene; Q-interrupted  $C_4-C_{12}$ alkylene; phenylene or phenylene-D-phenylene with D being  $C_1-C_4$ alkylene, O, S, SO or  $SO_2$ ;

Z as a trivalent group is  $C_3-C_{12}$ alkanetriyl, a trivalent residue of a hexose or a hexitol, a group  $(-CH_2)_3C-CH_2OH$ , or a group  $-C_aH_{2a}-N(C_bH_{2b})-C_cH_{2c}-$ ; and

Z as a tetravalent group is a tetravalent, carbon-ended residue of a hexose or a hexitol,  $C_4-$



a, b, c and k independently are 1, 2 or 3;

m is 0 or a number from the range 1-12, preferably 1-6;

n is 1 or 2;

q is 1, 2, 3, 4, 5 or 6;

r is 1, 2 or 3; and

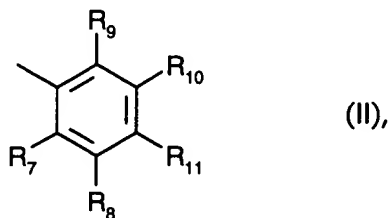
s is 0, 1 or 2;

v is 1, 2, 3, 4, 5, 6, 7 or 8, preferably 1 or 2;

provided that, when  $R_7$  is hydroxy, alkanoyloxy or alkanoyloxy interrupted by O, S or  $N(R_{14})$  and  $R_9$  is hydrogen,  $R_{10}$  is not identical with  $R_4$ ; and when  $R_9$  is hydroxy, alkanoyloxy or alkanoyloxy interrupted by O, S or  $N(R_{14})$  and  $R_7$  is hydrogen,  $R_8$  is not identical with  $R_4$ .

3. (amended) Process according to claim 1 wherein in the compound of formula I

$R_1$  is naphthyl, phenanthryl, anthryl, 5,6,7,8-tetrahydro-2-naphthyl, 5,6,7,8-tetrahydro-1-naphthyl, thienyl, benzo[b]thienyl, naphtho[2,3-b]thienyl, thianthrenyl, dibenzofuryl, chromenyl, xanthenyl, phenoxathiinyl, pyrrolyl, imidazolyl, pyrazolyl, pyrazinyl, pyrimidinyl, pyridazinyl, indoliziny, isoindolyl, indolyl, indazolyl, purinyl, quinoliziny, isoquinolyl, quinolyl, phthalazinyl, naphthyridinyl, quinoxaliny, quinazolinyl, cinnolinyl, pteridinyl, carbazolyl, -carbolinyl, phenanthridinyl, acridinyl, perimidinyl, phenanthrolinyl, phenazinyl, isothiazolyl, phenothiazinyl, isoxazolyl, furazanyl, biphenyl, terphenyl, fluorenyl or phenoxazinyl, each of which is unsubstituted or substituted by  $C_1$ - $C_4$ alkyl,  $C_1$ - $C_4$ alkoxy,  $C_1$ - $C_4$ alkylthio, hydroxy, halogen, amino,  $C_1$ - $C_4$ alkylamino, phenylamino or di( $C_1$ - $C_4$ -alkyl)amino, or  $R_1$  is a radical of formula II



and, if  $n = 2$ ,

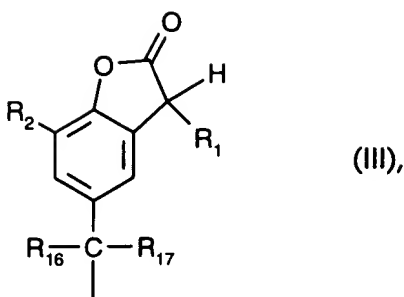
$R_1$  is unsubstituted or  $C_1$ - $C_4$ alkyl- or hydroxy-substituted phenylene or naphthylene; or  $-R_{12}-X-R_{13}-$ ,

$R_2$ ,  $R_3$ ,  $R_4$  and  $R_5$  are each independently of one another hydrogen, chloro, hydroxy,  $C_1$ - $C_{25}$ -alkyl,  $C_7$ - $C_9$ phenylalkyl, unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted  $C_5$ - $C_8$ cycloalkyl;  $C_1$ - $C_{18}$ alkoxy,  $C_1$ - $C_{18}$ alkylthio,  $C_1$ - $C_4$ alkylamino, di( $C_1$ - $C_4$ -alkyl)amino,  $C_1$ - $C_{25}$ alkanoyloxy,  $C_1$ - $C_{25}$ alkanoylamino,  $C_3$ - $C_{25}$ alkenoyloxy;  $C_3$ - $C_{25}$ alkanoyloxy which is

interrupted by oxygen, sulphur or  $\text{>N}-R_{14}$ ;  $C_6$ - $C_9$ cycloalkylcarbonyloxy, benzoyloxy or  $C_1$ -

$C_{12}$ alkyl-substituted benzoyloxy; or  $R_2$  and  $R_3$ , or  $R_3$  and  $R_4$ , or  $R_4$  and  $R_5$ , together with the linking carbon atoms, form a benzene ring; or  $R_4$  is

$-C_mH_{2m}-COR_{15}$  or  $-(CH_2)_qOH$  or, if  $R_3$ ,  $R_5$  and  $R_6$  are hydrogen,  $R_4$  is additionally a radical of formula III



wherein  $R_1$  is as defined above for  $n = 1$ ;

$R_6$  is hydrogen or, when  $R_4$  is hydroxy,  $R_6$  can also be  $C_1$ - $C_{25}$ alkyl or  $C_3$ - $C_{25}$ alkenyl;

$R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{10}$  and  $R_{11}$  are each independently of one another hydrogen, halogen, hydroxy,  $C_1$ -

$C_{25}$ alkyl;  $C_2$ - $C_{25}$ alkyl which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ;  $C_1$ - $C_{25}$ alkoxy;  $C_2$ -

$C_{25}$ alkoxy which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ;  $C_1$ - $C_{25}$ alkylthio,  $C_3$ - $C_{25}$ -alke-

nyl,  $C_3$ - $C_{25}$ alkenyloxy,  $C_3$ - $C_{25}$ alkynyl,  $C_3$ - $C_{25}$ alkynyloxy,  $C_7$ - $C_9$ phenylalkyl,  $C_7$ - $C_9$ phenylalkoxy, unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl; unsubstituted or  $C_1$ - $C_4$ alkyl- substituted phenoxy; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted  $C_5$ - $C_8$ cycloalkyl; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted  $C_5$ - $C_8$ cycloalkoxy;  $C_1$ - $C_4$ alkylamino, di( $C_1$ - $C_4$ alkyl)amino,  $C_1$ - $C_{25}$ alkanoyl;  $C_3$ -

$C_{25}$ alkanoyl which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ;  $C_1$ - $C_{25}$ alkanoyloxy;  $C_3$ -

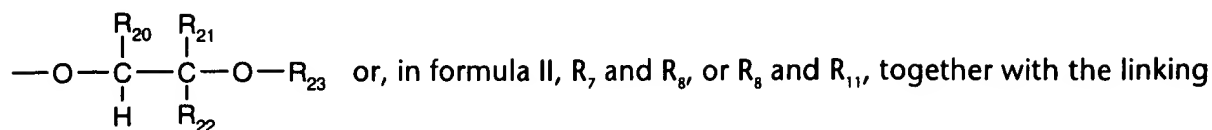
$C_{25}$ alkanoyloxy which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ;  $C_1$ - $C_{25}$ alkanoylamino,

$C_3$ - $C_{25}$ alkenoyl;  $C_3$ - $C_{25}$ alkenoyl which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ;  $C_3$ - $C_{25}$ -

alkenoyloxy;  $C_3$ - $C_{25}$ alkenoyloxy which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ;  $C_6$ - $C_9$ -

cycloalkylcarbonyl,  $C_6$ - $C_9$ cycloalkylcarbonyloxy, benzoyl or  $C_1$ - $C_{12}$ alkyl-substituted benzoyl;

benzoyloxy or C<sub>1</sub>-C<sub>12</sub>alkyl-substituted benzoyloxy;  $\text{—O—}\overset{\overset{\text{R}_{18}}{|}}{\underset{\underset{\text{R}_{19}}{|}}{\text{C}}}\text{—}\overset{\overset{\text{O}}{||}}{\text{C}}\text{—R}_{15}$  or

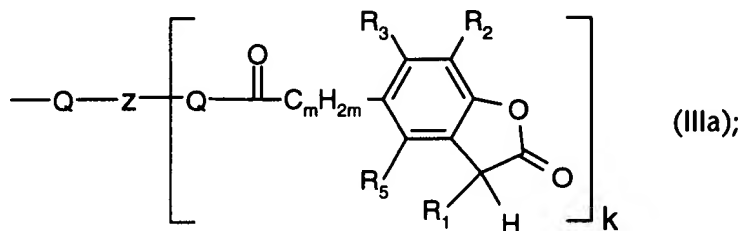


carbon atoms, form a benzene ring,

R<sub>12</sub> and R<sub>13</sub> are each independently of the other unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenylene or naphthylene,

R<sub>14</sub> is hydrogen or C<sub>1</sub>-C<sub>8</sub>alkyl,

R<sub>15</sub> is hydroxy,  $\left[ \text{—O}^- \frac{1}{r} \text{M}^{r+} \right]$ , C<sub>1</sub>-C<sub>20</sub>alkoxy,  $\text{—N}\begin{matrix} \text{R}_{24} \\ \text{R}_{25} \end{matrix}$ , or a group of the formula IIIa



R<sub>16</sub> and R<sub>17</sub> are each independently of the other hydrogen, CF<sub>3</sub>, C<sub>1</sub>-C<sub>12</sub>alkyl or phenyl, or R<sub>16</sub> and R<sub>17</sub>, together with the linking carbon atom, are a C<sub>5</sub>-C<sub>8</sub>cycloalkylidene ring which is unsubstituted or substituted by 1 to 3 C<sub>1</sub>-C<sub>4</sub>alkyl;

R<sub>18</sub> and R<sub>19</sub> are each independently of the other hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or phenyl,

R<sub>20</sub> is hydrogen or C<sub>1</sub>-C<sub>4</sub>alkyl,

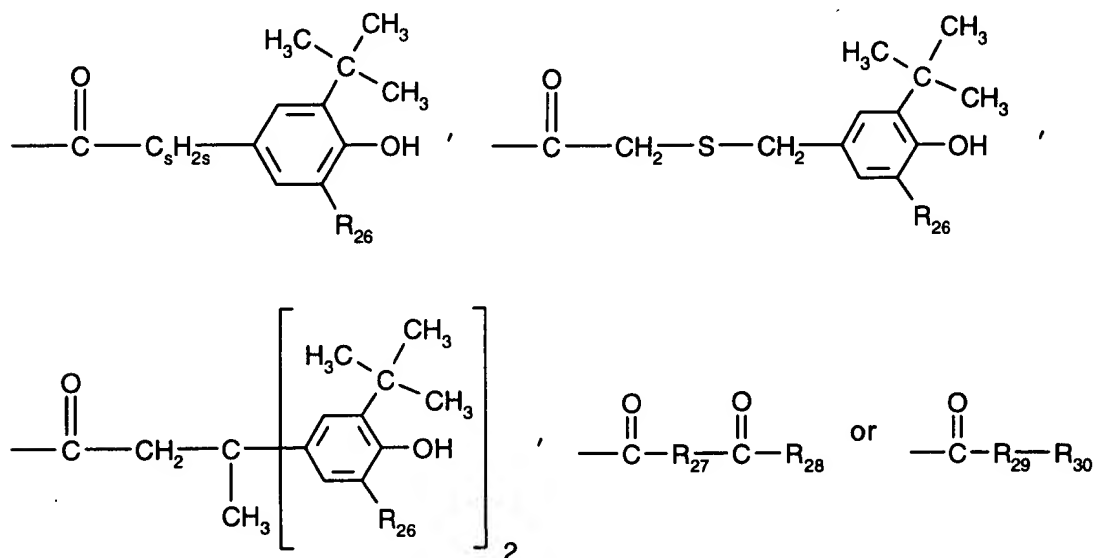
R<sub>21</sub> is hydrogen, unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenyl; C<sub>1</sub>-C<sub>25</sub>alkyl; C<sub>2</sub>-C<sub>25</sub>alkyl which is

interrupted by oxygen, sulphur or  $\text{>N—R}_{14}$ ; C<sub>7</sub>-C<sub>9</sub>phenylalkyl which is unsubstituted or

substituted at the phenyl moiety by 1 to 3 C<sub>1</sub>-C<sub>4</sub>alkyl; C<sub>7</sub>-C<sub>25</sub>phenylalkyl which is interrupted by

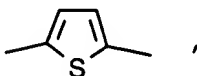
oxygen, sulphur or  $\text{>N—R}_{14}$  and which is unsubstituted or substituted at the phenyl moiety

by 1 to 3 C<sub>1</sub>-C<sub>4</sub>alkyl, or R<sub>20</sub> and R<sub>21</sub>, together with the linking carbon atoms, form a C<sub>5</sub>-C<sub>12</sub>cycloalkylene ring which is unsubstituted or substituted by 1 to 3 C<sub>1</sub>-C<sub>4</sub>alkyl;  
R<sub>22</sub> is hydrogen or C<sub>1</sub>-C<sub>4</sub>alkyl,  
R<sub>23</sub> is hydrogen, C<sub>1</sub>-C<sub>25</sub>alkanoyl, C<sub>3</sub>-C<sub>25</sub>alkenoyl; C<sub>3</sub>-C<sub>25</sub>alkanoyl which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ; C<sub>2</sub>-C<sub>25</sub>alkanoyl which is substituted by a di(C<sub>1</sub>-C<sub>6</sub>alkyl)phosphonate group; C<sub>6</sub>-C<sub>9</sub>cycloalkylcarbonyl, thenoyl, furoyl, benzoyl or C<sub>1</sub>-C<sub>12</sub>alkyl-substituted benzoyl;



R<sub>24</sub> and R<sub>25</sub> are each independently of the other hydrogen or C<sub>1</sub>-C<sub>18</sub>alkyl,  
R<sub>26</sub> is hydrogen or C<sub>1</sub>-C<sub>8</sub>alkyl,  
R<sub>27</sub> is a direct bond, C<sub>1</sub>-C<sub>18</sub>alkylene; C<sub>2</sub>-C<sub>18</sub>alkylene which is interrupted by oxygen, sulphur or  $\text{>N-R}_{14}$  ; C<sub>2</sub>-C<sub>18</sub>alkenylene, C<sub>2</sub>-C<sub>20</sub>alkylidene, C<sub>7</sub>-C<sub>20</sub>phenylalkylidene, C<sub>5</sub>-C<sub>8</sub>cycloalkylene, C<sub>7</sub>-

C<sub>8</sub>bicycloalkylene, unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenylene,  or



$R_{28}$  is hydroxy,  $\left[ -O^- \frac{1}{r} M^{r+} \right]$ ,  $C_1$ - $C_{18}$ alkoxy or  $-N \begin{matrix} R_{24} \\ R_{25} \end{matrix}$ ,

$R_{29}$  is oxygen or -NH-,

$R_{30}$  is  $C_1$ - $C_{18}$ alkyl or phenyl,

$R_{31}$  is hydrogen or  $C_1$ - $C_{18}$ alkyl,

M is an r-valent metal cation,

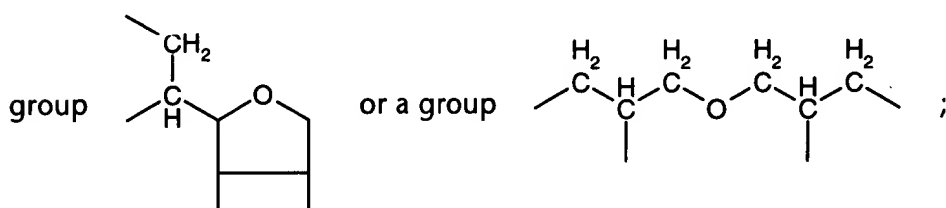
Q is oxygen or -NH-,

X is a direct bond, oxygen, sulphur or  $-NR_{31}-$ ,

Z is a linking group of valency (k+1) and is as a divalent group  $C_2$ - $C_{12}$ alkylene, Q-interrupted  $C_4$ - $C_{12}$ alkylene, phenylene or phenylene-D-phenylene with D being  $C_1$ - $C_4$ alkylene, O, S, SO or  $SO_2$ ;

Z as a trivalent group is  $C_3$ - $C_{12}$ alkanetriyl, a trivalent residue of a hexose or a hexitol, a group  $(-CH_2)_3C-CH_2OH$ , or a group  $-C_aH_{2a}-N(C_bH_{2b})-C_cH_{2c}$ ; and

Z as a tetravalent group is a tetravalent residue of a hexose or a hexitol,  $C_4$ - $C_{12}$ alkanetetryl, a



a, b, c and k independently are 1, 2 or 3,

m is 0 or a number from the range 1-12, preferably 1-6,

n is 1 or 2,

q is 1, 2, 3, 4, 5 or 6,

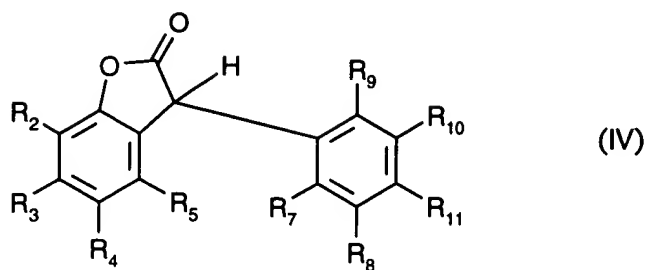
r is 1, 2 or 3, and

s is 0, 1 or 2;

provided that, when  $R_7$  is hydroxy, alkanoyloxy or alkanoyloxy interrupted by O, S or  $N(R_{14})$  and

$R_9$  is hydrogen,  $R_{10}$  is not identical with  $R_4$ .

5. (amended) Process according to claim 1 wherein the compound of formula I corresponds to the formula IV



wherein

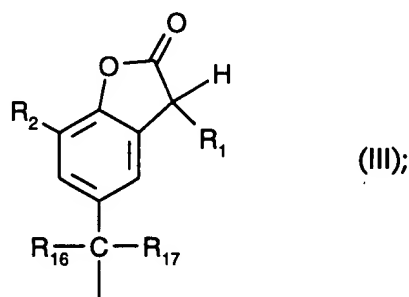
$R_2$  is H or  $C_1$ - $C_{20}$ alkyl;

$R_3$  is H or  $C_1$ - $C_{18}$ alkyl;

$R_4$  is  $C_1$ - $C_8$ alkyl, H,  $C_1$ - $C_6$ alkoxy or a group  $-C_mH_{2m}-COR_{15}$ ;  $-O-(C_vH_{2v})-COR_{15}$ ;

$-O-(CH_2)_q-OR_{32}$ ;  $-OCH_2-CH(OH)-CH_2-R_{15}$ ;  $-OCH_2-CH(OH)-CH_2-OR_{32}$ ;

or a group of the formula III



$R_5$  is H or  $C_1$ - $C_{18}$ alkyl;

$R_7$  and  $R_9$  are each independently of one another hydrogen; halogen;  $C_1$ - $C_{25}$ alkyl;  $C_3$ - $C_{25}$ -alkenyl;

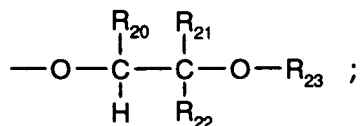
$C_3$ - $C_{25}$ alkynyl;  $C_7$ - $C_9$ phenylalkyl; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl; unsubstituted or

$C_1$ - $C_4$ alkyl-substituted  $C_5$ - $C_8$ cycloalkyl;

$R_8$ ,  $R_{10}$  and  $R_{11}$  independently are H, OH, chloro,  $C_1$ - $C_{18}$ alkyl,  $C_1$ - $C_{18}$ alkoxy, di( $C_1$ - $C_4$ alkyl)amino,

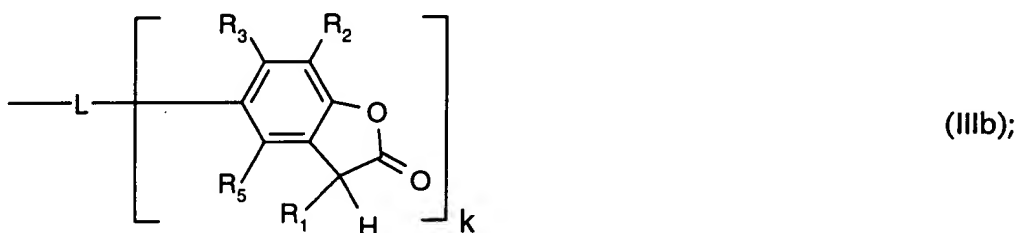
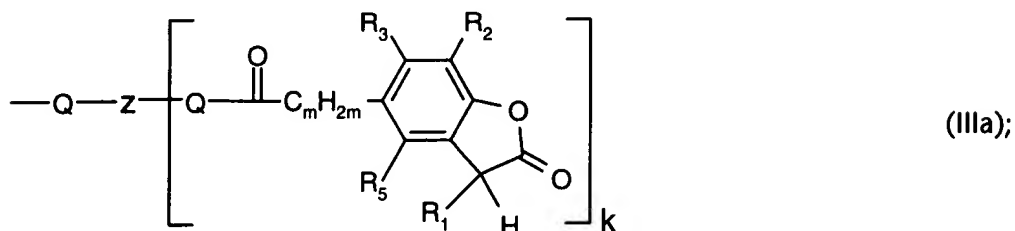
$C_7$ - $C_9$ phenylalkyl; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl; unsubstituted or  $C_1$ - $C_4$ alkyl-

substituted  $C_5$ - $C_8$ cycloalkyl;  $C_2$ - $C_{18}$ alkanoyloxy,  $C_3$ - $C_{18}$ -alkoxycarbonylalkoxy or



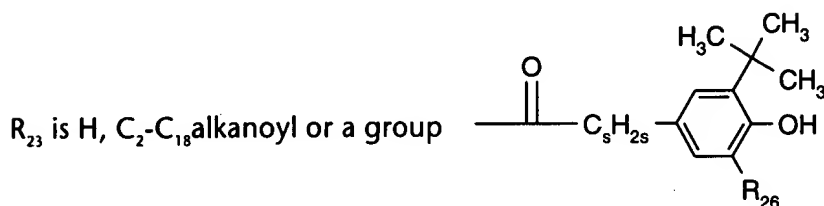
especially wherein at least 2 of the residues  $R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{10}$ ,  $R_{11}$  are H;

$R_{15}$  is  $C_1$ - $C_{18}$ alkoxy;  $C_3$ - $C_{20}$ alkoxy interrupted by O; or are cyclohexyloxy;  $C_7$ - $C_{17}$ phenylalkoxy; phenoxy; or a group of formula IIIa or IIIb;



$R_{16}$  and  $R_{17}$ , independently are H,  $C_1$ - $C_{12}$ alkyl or phenyl; or  $R_{16}$  and  $R_{17}$ , together with the bonding carbon atom form a  $C_5$ - $C_8$ cycloalkylidene ring;

$R_{20}$ ,  $R_{21}$  and  $R_{22}$  independently are H or  $C_1$ - $C_4$ alkyl;



$R_{26}$  is  $C_1$ - $C_4$ alkyl;

$R_{32}$  is  $C_1$ - $C_{18}$ alkanoyl;  $C_1$ - $C_8$ alkanoyl substituted by phenyl or  $C_7$ - $C_{15}$ alkylphenyl;  $C_3$ - $C_{18}$ alkenoyl; cyclohexylcarbonyl; or naphthylcarbonyl;

L is a divalent group -O-;  $Q-C_2-C_{12}$ alkylene-Q; -O- $CH_2$ -CH(OH)- $CH_2$ -O-;

- $Q-C_2-C_{12}$ alkylene-Q-CO- $C_vH_{2v}$ -O-; -O- $C_2-C_{12}$ alkylene-O- $CH_2$ -CH(OH)- $CH_2$ -O-;

Q is oxygen;

Z is  $C_2$ - $C_{12}$ alkylene;

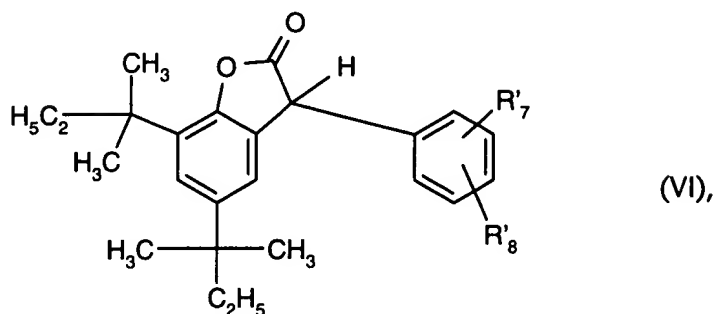
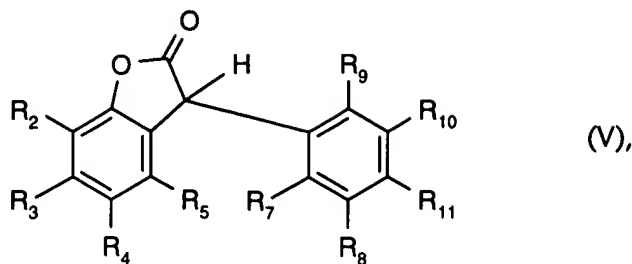
k is 1;

m is 1, 2, 3, 4, 5 or 6;

v is 1 or 2; and

s is 0, 1 or 2.

14. (amended) Compound of the formula V or VI



wherein

~~R<sub>4</sub> is -(CH<sub>2</sub>)<sub>n</sub>-COR<sub>15</sub>' or -CH(CH<sub>3</sub>)-COR<sub>15</sub>' or -C<sub>t</sub>H<sub>2t</sub>-COR<sub>15</sub>', wherein C<sub>t</sub>H<sub>2t</sub> is a straight chain or branched alkylene moiety; or R<sub>4</sub> is -O-(C<sub>v</sub>H<sub>2v</sub>)-COR<sub>15</sub>'; -O-(CH<sub>2</sub>)<sub>q</sub>-OR<sub>32</sub>'; -OCH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-R<sub>15</sub>'; or -OCH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-OR<sub>32</sub>;~~

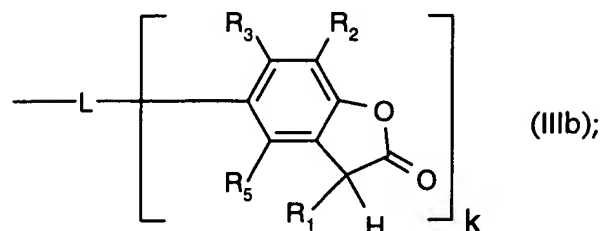
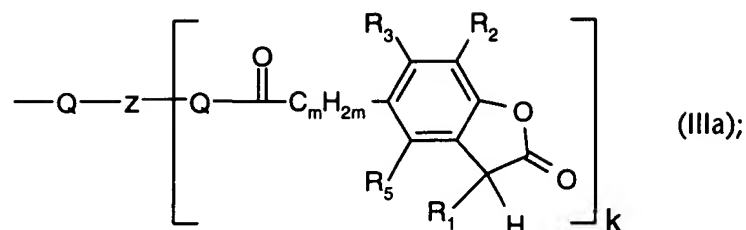
R'<sub>7</sub> is C<sub>1</sub>-C<sub>4</sub>alkyl and R'<sub>8</sub> is hydrogen or C<sub>1</sub>-C<sub>4</sub>alkyl;

R<sub>15</sub> is hydroxy,  $\left[ -O^- \frac{1}{r} M^{r+} \right]$ , C<sub>1</sub>-C<sub>20</sub>alkoxy; C<sub>3</sub>-C<sub>20</sub>alkoxy interrupted by O and/or

substituted by a radical selected from OH, phenoxy, C<sub>7</sub>-C<sub>15</sub>alkylphenoxy, C<sub>7</sub>-C<sub>15</sub>alkoxyphenoxy;

or R<sub>15</sub> is C<sub>5</sub>-C<sub>12</sub>cycloalkoxy; C<sub>7</sub>-C<sub>17</sub>phenylalkoxy; phenoxy;  $\begin{matrix} & R_{24} \\ & / \\ -N & \\ & \backslash \\ & R_{25} \end{matrix}$ ; or a group of formula

IIIa or IIIb;



~~R<sub>15</sub><sup>1</sup> is C<sub>3</sub>-C<sub>26</sub> alkoxy interrupted by O and/or substituted by a radical selected from OH, phenoxy, C<sub>7</sub>-C<sub>15</sub> alkylphenoxy, C<sub>7</sub>-C<sub>15</sub> alkoxyphenoxy; or R<sub>15</sub><sup>1</sup> is C<sub>5</sub>-C<sub>12</sub> cycloalkoxy, C<sub>7</sub>-C<sub>17</sub> phenylalkoxy, phenoxy, or a group of formula IIIa or IIIb;~~

R<sub>32</sub> is C<sub>1</sub>-C<sub>18</sub> alkanoyl; C<sub>1</sub>-C<sub>8</sub> alkanoyl substituted by phenyl or C<sub>7</sub>-C<sub>15</sub> alkylphenyl; C<sub>3</sub>-C<sub>18</sub> alkenoyl; cyclohexylcarbonyl; or naphthylcarbonyl;

L is a linking group of valency (k+1) and is, as a divalent group,

-O-;

Q-C<sub>2</sub>-C<sub>12</sub> alkylene-Q;

-O-CH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-O-;

-Q-C<sub>2</sub>-C<sub>12</sub> alkylene-Q-CO-C<sub>v</sub>H<sub>2v</sub>-O-;

-O-C<sub>2</sub>-C<sub>12</sub> alkylene-O-CH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-O-;

~~Q-interrupted Q-C<sub>4</sub>-C<sub>12</sub> alkylene-Q;~~

Q-phenylene-Q or

Q-phenylene-D-phenylene-Q with D being C<sub>1</sub>-C<sub>4</sub> alkylene, O, S, SO or SO<sub>2</sub>;

L, as a trivalent group, is Q-capped C<sub>3</sub>-C<sub>12</sub> alkanetriyl, a trivalent residue of a hexose or a hexitol, or a group (-O-CH<sub>2</sub>)<sub>3</sub>C-CH<sub>2</sub>OH; -Q-C<sub>8</sub>H<sub>28</sub>-N(C<sub>6</sub>H<sub>26</sub>-Q)-C<sub>6</sub>H<sub>26</sub>-Q;

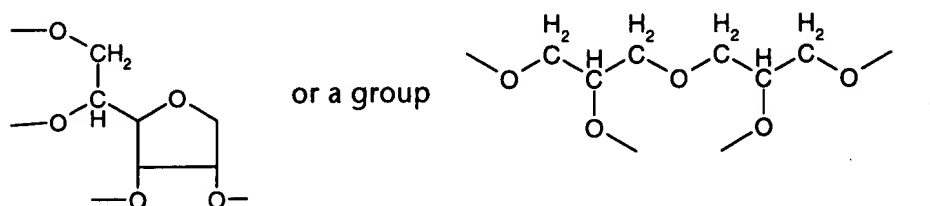
-Q-C<sub>3</sub>-C<sub>12</sub> alkanetriyl(-Q-CO-C<sub>v</sub>H<sub>2v</sub>-O-)<sub>2</sub>;

-O-C<sub>3</sub>-C<sub>12</sub> alkanetriyl(-O-CH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-O-)<sub>2</sub>; and

L, as a tetravalent group, is a tetravalent residue of a hexose or a hexitol;

-Q-C<sub>4</sub>-C<sub>12</sub> alkanetetriyl(-Q-CO-C<sub>v</sub>H<sub>2v</sub>-O-)<sub>3</sub>;

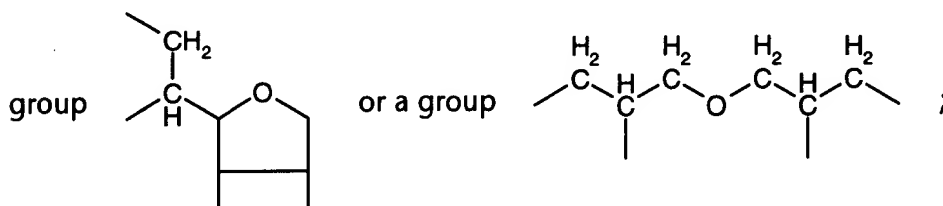
-O-C<sub>4</sub>-C<sub>12</sub>alkanetetryl(-O-CH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-O-)<sub>3</sub>; Q-capped C<sub>4</sub>-C<sub>12</sub>alkanetetryl; a group



Q is oxygen or -NH-,

Z is a linking group of valency (k+1) and is as a divalent group C<sub>2</sub>-C<sub>12</sub>alkylene, Q-interrupted C<sub>4</sub>-C<sub>12</sub>alkylene, phenylene or phenylene-D-phenylene with D being C<sub>1</sub>-C<sub>4</sub>alkylene, O, S, SO or SO<sub>2</sub>;  
Z, as a trivalent group, is C<sub>3</sub>-C<sub>12</sub>alkanetriyl, a trivalent residue of a hexose or a hexitol, a group (-CH<sub>2</sub>)<sub>3</sub>C-CH<sub>2</sub>OH, or a group -C<sub>a</sub>H<sub>2a</sub>-N(C<sub>b</sub>H<sub>2b</sub>-)-C<sub>c</sub>H<sub>2c</sub>-; and

Z, as a tetravalent group, is a tetravalent residue of a hexose or a hexitol, C<sub>4</sub>-C<sub>12</sub>alkanetetryl, a



a, b, c and k independently are 1, 2 or 3,

m is 0 or a number from the range 1-12,

s is 1 or 2,

~~and t is a number from the range 3-12,~~

v is 1, 2, 3, 4, 5, 6, 7 or 8;

and all other residues are as defined in claim 1 for formula I if n is 1.